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PRELIMINARY  
RECOMMENDED SANITATION GUIDELINES FOR  
PROCESSORS OF  
INDUSTRIAL FISHERY PRODUCTS

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U. S. Department of Agriculture

Agricultural Research Service

## F O R E W O R D

These recommended sanitation guidelines were prepared through the cooperative efforts of research workers, industry representatives, and State and Federal agencies.

Listed below are the private and public organizations which have contributed to these guidelines.

National Fisheries Institute

Bureau of Commercial Fisheries, U. S. Dept. of Interior

Communicable Disease Center, U. S. Public Health Service

American Feed Manufacturers Association

American Veterinary Medical Association

Conference of Veterinary Laboratory Diagnosticians

United States Livestock Sanitary Association

Poultry Inspection, Agricultural Marketing Service, USDA

Agricultural Research Service, USDA

Animal Disease & Parasite Research Division

Animal Inspection & Quarantine Division

Animal Husbandry Research Division

Meat Inspection Division

Animal Disease Eradication Division

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## I. INTRODUCTION

Whole fish and fresh raw or cooked fish material from filleting or cannery lines are used in the manufacture of fish meal for use in livestock and poultry feeds. As a result of individual and cooperative studies, domestic and foreign, reports have indicated the possible contamination or recontamination of the dried fish scrap and meal with Salmonella-type microorganisms. These studies indicate that this most likely occurs in handling and storage of the finished product.

## II. PURPOSE OF THE RECOMMENDED SANITATION GUIDELINES

The purpose of these guidelines is to outline operating procedures to fish meal processors for sound management and product handling in order to furnish a finished product that is free of Salmonella.

## III. PLANT PREMISES

(The guidelines listed below may be used to accomplish the objective. This does not exclude the use of other equally effective procedures.)

### A. GENERAL

1. Live animals and birds should not be permitted in "processed material" areas.

2. Rodent, vermin, bird, and insect control should be continually maintained in the plant.

3. No other business should be conducted in the buildings used for handling, processing, or storage of raw fish material for the processed product. "Processed material" areas should be kept



clean and free from refuse, trash, discarded and broken machinery, and semi-processed material such as press cake.

#### B. BUILDING CONSTRUCTION AND FACILITIES

1. Building construction and facilities vary from those of wide open construction in the Deep South to those of completely closed masonry or steel construction in other sections of the country. The objective is to PRODUCE PROCESSED MATERIAL THAT IS FREE OF SALMONELLA AND KEEP IT FREE. The building construction and facilities can be geared to fit each manufacturer's needs.

2. Adequate personnel showering, dressing, and disinfecting facilities should be available for employee use.

#### C. PROCESSING EQUIPMENT

Control procedures should be initiated to assure that the raw material has been heated to a temperature sufficient to kill all Salmonella organisms.

#### D. FISH MATERIAL PROCESSING AND STORAGE AREAS

1. The processing area of a plant should be divided into "processed material" areas and "raw material" areas. These areas should be in separate buildings or otherwise effectively separated.

2. Insofar as possible, different personnel should be used in each area. Where personnel must work in both areas, use of protective caps, dust coats, and shoe covering for use only in the scrap curing and storage areas should be considered.

3. Cleaning equipment (brooms, etc.) also shovels and tractor-driven scrapers used in moving the piles of scrap should not be used outside the scrap curing and storage area. When this area includes several buildings, paved, hard surfaced walk or driveways that can

be kept clean and dry should connect buildings. If practical, these passageways should be covered.

#### E. MOISTURE CONTROL

1. Storage areas, walls, floors, and ceilings should be leakproof to keep out moisture.

2. The processed product should be kept dry at all times. Germs require moisture to multiply so that a dry scrap curing and storage area helps keep germ life of all types, including Salmonella, at low levels.

#### F. DUST CONTROL

In the curing process for the dried fish scrap, employing the dropping method for aerating and cooling, the small particles of the material that collect on the floor in the vicinity of the scrap pile should be cleaned up when the dropping procedure is discontinued. After the fish scrap has been moved out and the shed is empty, it should undergo a cleaning process for removal of residues of scrap and dust before receiving new materials.

#### G. PREVENTION OF CONTAMINATION BY FOOTWEAR

All entryways to "processed material" areas should be protected if possible, by shallow pans containing a pad or mat wet with disinfectant. The pan should be the length of the entryway and wide enough so as not to be easily stepped across. Maintenance is important. Pads should not be allowed to dry out or become filled with dirt, and a stable disinfectant of adequate strength should be used in the pan. Preferably, the footwear of all personnel entering these areas should be scrubbed off with a disinfectant solution, using a stiff brush, or changed. Containers of disinfectant and brushes should be kept outside



all entryways. This precaution is considered very important in efforts to control Salmonella.

#### IV. TRANSPORTATION

##### A. VESSELS AND TRUCKS FOR TRANSPORTING "RAW MATERIAL"

1. Whole fish are normally brought directly to the plant in the catching vessel. Vessel holds should be thoroughly washed down with clean water after each trip.

2. Trucks, tanks, or barrels used to hold and transport fish material from processing lines to fish meal plants should be tight leakproof construction.

##### B. TRUCKS, FREIGHT CARS, AND BARGES FOR TRANSPORTING "PROCESSED MATERIAL"

The equipment used for transporting the "processed material" is a serious potential source for contaminating a "Salmonella-clean Product" during shipment. Frequently, this equipment is not the property of the shipper, and thus there are acknowledged difficulties in maintaining it in clean condition. Notwithstanding, all equipment should be inspected before loading to see that it has been properly cleaned. If it is not clean, it should receive proper cleaning.

#### V. CONTAINERS FOR "PROCESSED MATERIAL"

Only new or sterile used bags or other containers should be used for packaging "processed material." Empty bags should be stored in such a manner that they do not become contaminated before use

## VI. SAMPLING AND LABORATORY EXAMINATION

Samples of the processed material should be taken at time of shipment. Periodically, a representative sample should be submitted to laboratory examination to determine the adequacy of the processing, handling, and storage methods in producing a Salmonella-free product.

A sample can be obtained by taking one tablespoonful of material from each ton of the shipment. (In bulk shipment this is taken at varying intervals of time as it is loaded. In package material, it is taken from each 20th bag.) These samples are placed in a new, clean secure container -- the container is then labeled with the shipment number and date and stored in a cool, clean, dry place. A representative sample may be made as a composite of the shipment samples in this manner. Mix thoroughly by shaking the containers of 10 samples then pour about 1 tablespoonful from each into a new container. The composite sample is sealed and labeled with the identification number of each of the various shipments represented and mailed to a laboratory. The remainder of the shipment sample is returned to storage until the laboratory report is received in case more definitive testing is desired. All containers and instruments used in collecting samples are to be kept sterile. Forms and information for submitting samples to a laboratory will be given by designated State officials. \*

## VII. TRAINING

All plant employees should be thoroughly trained in these Plant Sanitation Guidelines and in the need for strict adherence to them.

\*See footnote in Glossary

VIII. RESPONSIBILITY FOR SANITATION GUIDELINE COMPLIANCE

Key plant personnel should be trained as a security or safety officer to ascertain that all aspects of the guidelines are carried out. If processed products are found to be contaminated through laboratory examination, the sanitation procedures of the plant should be re-examined and corrective measures instituted.

IX. CLEANING AGENTS

Cleaning agents preferably are applied in hot water solution. A good commercial detergent should be used. A steam gun or high pressure jet of detergent solution should be used to loosen and remove grease and other material sticking to the surfaces being cleaned. Surfaces should be free of grease and adhering material following the cleaning operation prior to applying the disinfecting solutions.

X. DISINFECTANTS

After a thorough physical cleaning, a disinfectant having recognized germicidal properties should be used to aid in the destruction of any remaining organisms.

XI. GLOSSARY

A. FISH MATERIAL

Fish material means whole raw fish, raw waste such as remain after removal of fish fillets or cooked waste.

B. CLEANING AGENTS

Commercial detergents useful in removing grease and/or other material sticking to the object being cleaned.

C. "PROCESSED MATERIAL" AREA

Area used for curing, turning, storage, grinding, and loading of dried scrap or meal.



D. "RAW MATERIAL" AREA

Area used for unloading, measuring, transporting, handling, or storing raw fish or non-processed fish material.

E. RAW MATERIAL

Fish material that has not been properly processed.

F. PROCESSED MATERIAL

Fish material that has been heat treated during processing sufficient to reduce moisture content to less than ten percent.

G. SALMONELLA-CLEAN FISH MATERIAL

"Processed material" in which the presence of Salmonella is not detectable when sampled by procedures outlined in this guideline and subjected to laboratory examination. The fish industry and/or allied utilization industries should consider giving special recognition to those processors who operate under these guidelines.

H. DISINFECTANT

Agent that destroys infective germs when it is applied in an appropriate manner.

\* Laboratory examination is to be done as outlined in USDA Handbook (ARS 91-36) "Recommended Procedures for the Laboratory Isolation of Salmonella Organisms from Animal Feeds and Meat By-Products." The frequency of sampling and number of samples tested to the laboratory will be determined in cooperation with the processor, the laboratory supervisor and the designated disease control representative.



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